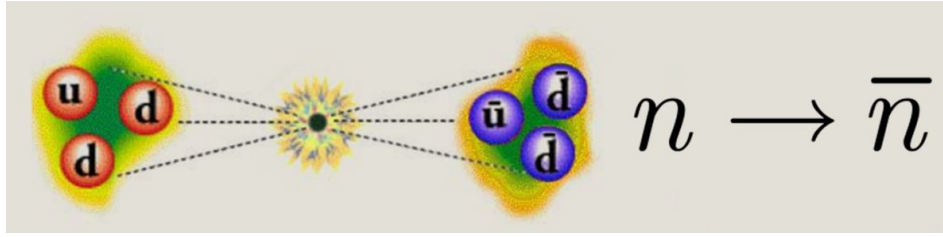


## Theoretical Innovations for Future Experiments Regarding Baryon Number Violation, Part 1



Contribution ID: 3

Type: **Oral Presentation**

### The European Spallation Source and Future Free Neutron Oscillations Searches

*Monday, August 3, 2020 11:30 AM (30 minutes)*

The European Spallation Source ESS, presently under construction, in Lund, Sweden, is a multi-disciplinary international laboratory. It will operate the world's most powerful pulsed neutron source. Taking advantage of the unique potential of the ESS, the NNBAR collaboration proposed a two-stage program of experiments to perform high precision searches for neutron conversion in a range of baryon number violation (BNV) channels culminating in an ultimate sensitivity increase for  $n \rightarrow \bar{n}$  oscillations of three orders of magnitude over the previously attained limit obtained at the Institut Laue-Langevin ILL.

The first stage of this program HIBEAM (High Intensity Baryon Extraction and Measurement) will employ the fundamental physics beamline during the first phase of the ESS operation. This stage focuses principally on searches for neutron conversion to sterile neutrons  $n'$ . The second stage, NNBAR will exploit the Large Beam Port (LBP), a unique component of the ESS facility to search directly for  $n \rightarrow \bar{n}$ .

In the talk, I will briefly discuss the scientific motivations for these searches, the status of the the European Spallation Source and the recent developments in the HIBEAM/NNBAR Collaboration.

#### Contribution Title

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